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ALCOHOL CONSUMPTION AS A RESPONSE TO ANXIETY LEVEL
AND ALCOHOL EXPECTANCY

By

ROBERT E. STEED

Captain, United States Air Force
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ROBERT E. STEED

A THESIS PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

UNIVERSITY OF FLORIDA

1991

This thesis is dedicated to Milad Moussa, who died in the service of his country in Lebanon in January, 1990, to all the men and women who served this country in Desert Storm, and to all those trying to restore peace in the Middle East.

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Abstract of Thesis Presented to the Graduate School
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Chairperson: Karolyn Godbey
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The Tension Reduction Hypothesis is that people drink alcohol for anxiety relief. Research has shown that individuals expect alcohol to affect them in specific ways. The purpose of this research was to explore the relationship between self-reports of trait anxiety levels, expectations that alcohol will reduce stress, and level of alcohol consumption.

Data from the Trait Scale of the State-Trait Anxiety Inventory, the Alcohol Expectancy Questionnaire, and the Khavari Alcohol Test were analyzed. The convenience sample consisted of 85 federal employees. The majority were aged 30 to 49 years (77.4%), Caucasian (83%), and married (71%).

No statistically significant correlations were found between self-reports of trait anxiety and alcohol consumption, between alcohol expectancy and alcohol consumption, or between alcohol expectancy and alcohol consumption when trait anxiety and alcohol consumption were negatively correlated. It is suggested that in future studies populations having broader socioeconomic and age ranges be investigated.

CHAPTER I INTRODUCTION

The production of alcoholic beverages has been part of mankind's way of life since the nomadic existence was replaced by an agricultural society (Druley, Baker, & Pashko, 1987). Some of the earliest records of alcohol use, taken from ancient Egyptian writings, also indicate that alcohol-related difficulties have been part of man's response to the use of alcoholic beverages (Austin, 1985). As early as 2600 BC, Egyptian physicians were urging moderation in the consumption of alcoholic beverages. This was probably a response to the death of a king, which came about prematurely due to excessive drinking (Austin, 1985).

Alcohol abuse continues to be a problem today. Estimates are that 117 billion dollars are lost annually due to forfeited wages, decreased productivity, and treatment expenditures related to excessive alcohol use (National Institute on Alcohol Abuse and Alcoholism, 1987). Identifying why individuals drink alcohol may be an important step in providing improved rehabilitation measures (Young, Oei, & Knight, 1990).

There are numerous reasons for consuming alcohol. Early records indicate that man has used alcohol for medicinal purposes, religious rites, rituals, energy boosts, and celebration since Neolithic times (Lender, 1987). Today, medicinal, religious, ritual, and celebratory reasons remain as explanations for some level of alcohol consumption.

A major reason for drinking is to relieve stress. In a review of surveys, Powers and Kutash (1985) found that 85% to 95% of respondents indicate that the desire for stress relief is a major cause of alcohol consumption. The theory that people drink alcohol to reduce stress is known as the Tension Reduction Hypothesis (TRH). The TRH is composed of two related statements. The first is that alcohol, probably due to its depressive effects, reduces stress. The second is that people drink to obtain these stress relief benefits (Conger, 1951; Kalodner, Delucia, & Ursprung, 1989; Powers & Kutash, 1985; Young, Oei, & Knight, 1990). The relationship between stress and alcohol use was originally hypothesized in the latter half of the 19th century. It was not referred to as the TRH until 1951 (Conger, 1951).

Studies where the investigator has attempted to support or refute the TRH have shown contradictory results (Kalodner, Delucia, & Ursprung, 1989; Powers & Kutash, 1985; Young, Oei, & Knight, 1990). Much of the discrepancy in results is probably due to lack of consensus regarding the definitions of stress and alcohol use. Investigators usually explore stressors which would be defined as distress rather than positive stress, or eustress. In such studies stress is described as worry, tension, anxiety, fear, depression, or anger. In these studies, alcohol use has been used interchangeably with alcoholism, alcohol abuse, increased alcohol use, heavy drinking, and alcohol consumption.

Another factor which influences alcohol use is alcohol expectancy, or an individual's perception of how alcohol will affect him or her (Young, Oei, & Knight, 1990). Each individual has a slightly different expectation of the effects of alcohol based on prior experience with alcohol or based on what the individual has learned from parents, friends, or other sources concerning the effects of alcohol. Blumer

(1969) proposed that each individual perceives situations or objects in a highly individualized manner. Two people faced with the same situation are therefore likely to have different responses based on their individualized conception of the reality of the situation.

Reactions to stressful stimuli can also elicit highly individualized responses. Anxiety is a common reaction to stress. This emotion is felt by the individual to be unpleasant, but the individual may not be able to identify precisely what is causing the anxious feelings. Anxiety may be manifest as either state anxiety or trait anxiety. State anxiety refers to immediate or acute stress, while trait anxiety refers to lifelong or chronic stress (Kaczorowski, 1989; Simpson, 1980; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The TRH is based on the concept that individuals will drink to receive relief from stress. While individuals may be faced with similar stressors, individual responses to these stressors may vary. The TRH only becomes a factor when the individual drinks alcohol in response to stress. An individual's perception of anxiety levels are therefore an appropriate measure of the degree to which the individual is responding to and hampered by stressful stimuli.

Combining the TRH with personal alcohol expectancy views may provide more complete information about why individuals drink. Believing that alcohol reduces stress and perceiving that one's current situation is stressful, one might consume alcohol for stress relief.

Purpose Statement

The purpose of this study was to explore the relationship between self-reports of trait anxiety levels, expectations that alcohol will reduce anxiety, and level of alcohol consumption.

Hypotheses

In this study three hypotheses were explored.

1. There is a positive correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption.
2. There is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption.
3. There is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption when there is a negative correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption.

Impact

Findings from the study of the interaction between the TRH and alcohol expectancy can be used in the assessment and treatment of individuals who engage in excessive alcohol consumption. According to Kalodner, Delucia, and Ursprung (1989), the TRH has not been compared with alcohol expectancy. If increased perceptions of anxiety in combination with the belief that alcohol can reduce anxiety leads to increased alcohol intake, then random assessments of perceptions of anxiety levels and alcohol expectancies could be used to identify individuals in need of learning alternative stress-reducing techniques. These techniques might include exercise programs, relaxation techniques, vacation time on a regular basis, or restructuring of the work environment. Learning alternative stress-reducing techniques could prevent many of these individuals from developing alcohol-related problems.

In addition, if alcohol expectancy has a significant impact on the use of alcohol for stress reduction, treatment programs can emphasize changing beliefs about alcohol. Alcohol treatment programs which focus only on stress reduction might be enhanced by targeting persons with tension reduction expectancies (Young, Oei, & Knight, 1990).

Terminology

For the purposes of this study, the following definitions are used:

Alcohol abuse refers to ingestion of alcohol which causes any personal, physical, psychological, familial, social, legal, employment, or financial hardship.

Alcohol use refers to any ingestion of alcohol.

Anxiety refers to a vague sense of uneasiness, apprehension, or tension stemming from a non-specific source as perceived by an individual.

Trait anxiety refers to an enduring or predispositional anxiety response.

Assumptions

The assumptions basic to this study are that subjects will be accurate in self-reporting of

1. Levels of generalized, persistent anxiety.
2. Perceptions of the effects alcohol consumption produces.
3. Amounts of alcohol consumed.

Limitations

The results of this study

1. Cannot be generalized outside employees of this federal government office.

2. May contain extrinsic variables which could account for some of the findings, since the sample was obtained by convenience rather than random methods.

CHAPTER II LITERATURE REVIEW

The literature review consists of a history of humankind's use of alcoholic beverages, and then a discussion of stress and anxiety. The Tension Reduction Hypothesis, the hypothesis that people drink alcohol to experience relief of tension, is then discussed. Finally, alcohol expectancy, or an individual's perception of the effects alcohol consumption produces, is described.

History of Alcohol Use

Alcoholic beverages have been made and consumed by man since the Neolithic Age, some 8,000 years ago (Lender, 1987). After abandoning the nomadic lifestyle in favor of an agricultural society, Neolithic man made the first beer and wine using berries and honey (Druley, Baker, & Pashko, 1987). Ancient societies enjoyed alcoholic beverages for quick energy, relief of pain, for religious rituals, and to forget the constant threats to survival (Druley, Baker, & Pashko, 1987).

The presence of the enzyme alcohol dehydrogenase may be some evidence of the duration of man's use of alcohol. This enzyme, found in the liver and the digestive tract, initiates the oxidation of alcohol and serves no other known purpose in the body. Keller (Druley, Baker, & Pashko, 1987) states that the human body contains enough alcohol dehydrogenase to metabolize one quart of whiskey per day. It is not known whether alcohol dehydrogenase is an intrinsic part of man's make-up, but because other systems in the body can not tolerate this

amount of alcohol it has been suggested that this enzyme may be the product of evolutionary changes to adapt to alcohol consumption (Druley, Baker, & Pashko, 1987).

Man has been drinking alcohol for thousands of years, but for almost 5,000 years excessive drinking has been recognized as a potential health hazard. In Egypt, around 3000 BC, drunkenness was viewed as a joyful experience possibly even bordering on religious ecstasy (Austin, 1985). By 2600 BC, royal physicians are recorded as urging moderation in alcohol use, possibly due to the premature death of one of the kings of Memphis, whose tomb inscriptions reveal that he died an early death because of excessive alcohol use (Austin, 1985).

Nearly a century before Christ's birth, societies generally seemed to accept the notion that alcohol use, in moderation, was socially acceptable. The Greeks, in approximately 800 BC, were known as very temperate drinkers. Wine was used for religious ceremonies and rituals such as rites of welcome and displays of "manliness." Drunkenness was abhorred (Austin, 1985). In 375 AD, the Christian church proclaimed that despising wine was heresy since it was a gift from God. Drunkenness, on the other hand, abused God's gift. It was therefore encouraged that one should avoid all use of alcohol except those uses that were medicinal (Austin, 1985). In 1673, Increase Mather published a dissertation, Woe to Drunkards, which purported that while alcohol was something to be thankful for, alcohol abuse was the result of giving in to Satan (Druley, Baker, & Pashko, 1987). In the United States advertisements implying the near necessity of alcohol to ensure enjoyment of a special occasion coexist with advertisements supporting punitive measures for individuals who use alcohol recklessly (especially driving under the influence of alcohol).

These selected historical viewpoints show that Western societies have had fairly consistent views regarding alcoholic beverages for nearly fifty centuries. That is, the moderate use of alcohol is something to be enjoyed, while excessive use or abuse of alcohol is decried.

Moralists debate whether or not alcohol has any appropriate purpose for human consumption while legal and medical authorities try to decide whether alcoholism is a true disease. The fact remains that alcohol use is as consistent a part of human behavior as planting and growing food.

If society accepts alcohol consumption in moderation but does not accept alcohol abuse, why do some individuals drink to the point of abuse? One explanation is that alcohol use is intended to meet a personal need and is not solely for socialization or enjoyment. One such need is the need to reduce stress.

Stress and Anxiety

Stress

Defining stress is a difficult task, especially in light of past research. Stress has been defined in almost as many ways as there have been studies of stress-related issues. Some definitions include: "(a) a condition of environmental exposure; (b) an appraisal of an environmental situation; (c) a response to the environmental exposure or to the appraisal; (d) a state of distress, the stimulus conditions for which are not specified; and, (e) an interactive term indicating the person's capacity to meet these demands" (Gottheil, Druley, Pashko, & Weinstein, 1987, p. 41).

Stress may be described as systemic (physiological), psychological, and/or social. Definitions may place these three together as an inter-related whole, or separate, with no specific relationship. The

word stress has been used to describe phenomena which cause stress, response to those phenomena, or as an interaction between stimulus and response (Monat & Lazarus, 1985). Stress may also be described as pleasant or "good," as in eustress; or unpleasant or damaging, as in distress (Selye, 1974). Frustration, threat, and harm are also terms which have occasionally been used as synonyms for stress (Mikhail, 1985).

Miller and Keane (1978) define stress as "the sum of all the nonspecific biological phenomena elicited by adverse external influences, including damage and defense. Stress may be either physical or psychologic, or both" (p. 959). This definition encompasses a wide array of feelings and could include anxiety, physical pain, job and family related tensions, anger, fear, and depression.

According to Hans Selye (1974), stress is "the nonspecific response of the body to any demand made upon it" (p. 27). This definition uses the term "nonspecific response" to mean the common need to adapt to changes in the internal or external environment. While specific stimuli require specific responses, such as running up a flight of stairs requires increased heart and respiratory rates, the stress response is mainly one of activities aimed at readjusting to changing requirements.

Selye (1983) writes that regardless of one's desire to experience a situation requiring readjustment, such as finding that one's relative who was feared dead is actually alive, the body and mind must engage in compensatory action. Selye (1974) refers to pleasant stress such as the joy of winning the Super Bowl, as eustress, while unpleasant stress such as the death of a loved one is described as distress.

Individual differences can determine the way an individual copes with a given amount of stress. Lazarus, Deese, and Osler (1952), point out that individuals tend to respond differently to similar amounts and types of stress. For example, they state that students with higher grade point averages tend to respond to increased academic stress by improving their performance. Students with lower grade point averages tend to decrease their performance under similar amounts of stress.

Blumer (1969) postulated that individuals perceive their environments differently. In his book, Symbolic Interactionism, Blumer (1969) states that humans respond to situations and events based on the meaning those situations or events hold for them. In the example above, students with higher grade point averages may feel that school stress is to be expected, and that the stress is a signal to work harder. Students with lower grade point averages may feel that school stress is a foreboding of failure, and working harder would therefore be useless.

What is stressful and the degree of stress is determined by the individual's perception of the stressful situation rather than by the situation itself. This concept is based on the belief that stress is defined in terms of the response an organism has to a given situation. This response is the result of internal and external forces which are not imposed but rather are perceived by the organism and which may stretch coping abilities to or beyond their limits (Mikhail, 1985).

Cofer and Appley (1964) proposed that stress is "the state of an organism where he perceives that his well-being (or integrity) is endangered and that he must divert all his energies to its protection" (p. 453). The extent of stress, in this view, depends at least in part on the ability of the organism to cope. When the organism perceives that all his coping skills have been expended, stress becomes unbearable.

Stress can also lead to disease states in any of three ways. The first is by alteration in tissue function due to neurohormonal alterations resulting from the stress response. A second pattern of response which can lead to disease states is psychological or sociocultural attitudes which cause the person experiencing health status changes to avoid seeking professional help. The third response to stress which can produce disease states lies in health habit changes due to stress. One example is the bulimic's response of binge eating in response to stressful situations. Other responses which may precipitate disease are ignoring the need for adequate rest, poor diet, the use of illegal substances, or heavy use of tobacco or alcohol (Monat & Lazarus, 1985).

Stress, as seen above, can be defined in many ways and may be manifest in numerous forms. Anxiety is one of the manifestations of stress response. Anxiety shares stress' characteristic by being variously defined. "If alcoholism can be called a 'big fat word' (Christie & Bruun, 1969), because it is ill-defined and used over-inclusively, then arousal and anxiety are bordering on the obese" (Hodgson, Stockwell, & Rankin, 1979, p. 459).

Anxiety

Hicks, Okonek, and Davis (1980) define anxiety using the American Psychiatric Association's definition of "apprehension, tension, or uneasiness that stems from the anticipation of danger, the source of which is largely unknown or unrecognized" (p. 429). Stress refers to the internal or external stimuli which can cause anxiety. Internal stimuli include physical illnesses, and external stimuli can include social pressure or working under deadlines.

Anxiety can also include feelings of dread or uneasiness about potential events, such as worrying about performing poorly at one's job or about the possibility of nuclear war. While these are rational, realistic concerns, there is no way of knowing when or if they might occur, and they therefore result in feelings of anxiety (Miller & Keane, 1978).

Anxiety, according to Goodwin (1986), "is an emotion that signifies the presence of a danger that cannot be identified, or, if identified, is not sufficiently threatening to justify the intensity of the emotion" (p. 3). Differentiating anxiety from fear, Goodwin states that fear is useful because it signifies the presence of a known danger. Anxiety is unwanted and does not lead to anything useful because the genuine source of the distress experienced is unknown.

Some psychiatrists, Goodwin (1986) continues, feel that some amount of anxiety is necessary for creativity, motivation, and learning. Goodwin concludes, however, that "'normal' anxiety" may be good but "'abnormal' anxiety" never is (Goodwin, 1986, p. 4). Goodwin (1986) sees this as a semantic problem or interchangeably using fear and anxiety. He gives the example of a woman who becomes anxious while shopping at a grocery store, and later becomes anxious about her husband's heavy drinking. He points out that the woman, in reality, is fearful of her husband's drinking; she knows what the sequelae of this may be. In the grocery store, on the other hand, she is anxious; there is no apparent stimulus for her emotions.

Branch (1986) described anxiety as "the apprehensive tension or uneasiness which stems from the anticipation of imminent danger, in which the source is largely unknown or unrecognized" (p. 9). He agrees that some definitions have included knowledge of the danger which evokes the

emotion. Branch continues that regardless of the definition anxiety is a distressing feeling.

Simpson (1980) views anxiety as "a personality characteristic of responding to certain situations with a stress syndrome of responses" (p. 455). This definition encompasses two interesting points. The first is that anxiety is a response based on an individual's perception of a given situation. The second is that anxiety can be noted by symptoms of stress, such as tachycardia, diaphoresis, and shortness of breath.

Anxiety manifests itself in two ways. The first is transitory and arises in response to immediate stressors. This is known as state anxiety and generally is aroused only in specific situations. It is also referred to as acute anxiety (Kaczorowski, 1989; Simpson, 1980; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The second way anxiety may manifest itself is in an enduring or predispositional response. This is referred to as trait anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Also referred to as chronic anxiety, trait anxiety is "a generalized tendency to respond with anxiety when stress is induced" (Simpson, 1980). Trait anxiety is a lifelong tendency to respond with anxiety to any amount of stress.

The difference between state and trait anxiety may be illustrated by the results of a study by Pancheri, De Martino, Spiombi, Biondi, and Mosticoni (1985). This study examined State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) responses of 18 bronchial asthma patients, 20 allergic rhinitis patients, 22 gastroduodenal patients, 28 ulcerative colitis patients, 10 Crohn's disease patients, 20 myocardial infarct patients, 22 cervical cancer patients, 17 uterine fibroma patients, and 83 psychiatric patients

(25 anxiety neurosis; 28 depressive neurosis; 20 phobic neurosis; 10 hypochondriasis). All respondents were hospitalized at the time of their responses to the surveys. Those who were hospitalized for anxiety-related disorders, specifically the psychiatric patients, scored significantly higher on trait anxiety indices than did all other groups of patients. However, those facing life-threatening illness, specifically cancer, gastrointestinal, and myocardial infarct patients scored higher on state anxiety indices than did psychiatric or asthma/rhinitis patients.

The relationship between state and trait anxiety is also illustrated with the results of a study by Fox, O'Boyle, Barry, and McCreary (1989). This study sought to determine if state anxiety could be predicted by trait anxiety. The study examined STAI responses of 39 pre-operative dental surgery patients. State anxiety scales were completed one hour prior to surgery, and again 15 minutes after surgery. Trait anxiety scales were completed one week later when clients returned for suture removal. While all patients reported significantly higher pre-op state anxiety than post-op state anxiety, the most marked elevations were found in patients who reported higher levels of trait anxiety.

The significance of state and trait anxiety to researchers is profound. High state anxiety may indicate that an individual is in need of tension reduction interventions. However, high trait anxiety, even in the absence of high state anxiety, indicates that individuals are in need of tension reduction interventions to be used throughout their lives. In addition, while state anxiety scores can give researchers insight into the current anxiety level of individuals, trait anxiety provides information about the individuals' enduring anxiety patterns.

In summary, anxiety is an emotion which is unpleasant, stressful, and for which the source or cause is unknown or vague. Simpson (1980) has postulated that anxiety is based on an individual's perception of a given situation, which is quite similar to Blumer's (1969) idea that different individuals are likely to have different assessments of the relevance of the same situation. Anxiety may manifest itself as state (acute) anxiety, or trait (chronic) anxiety. Finally, anxiety is one form of stress.

Powers and Kutash (1985) state, "Perhaps the most influential of all factors in the relation of stress and alcohol are individuals' modes of appraisal of stressors and their repertory of coping responses" (p. 471). People who consume alcohol in response to stress would do so based on individual perceptions of both their environment and their stress levels, as well as their learned coping patterns involving the use of alcohol.

Tension Reduction Hypothesis

There are numerous factors which contribute to excessive or abusive alcohol ingestion. The media may play a very important part. Television, radio, and print advertisements portray alcohol use as glamorous, improving one's sex appeal. Television programs present alcohol use by adults favorably. A study of 15 of the top situation comedies and prime-time dramas in the United States over a six-year period (1976-1982; 1981 omitted due to funding curtailments), showed that alcoholic beverages were consumed by characters almost twice as frequently as coffee, tea, soft drinks, and water combined. Often, characters were encouraged by others to have a drink because it would make them feel better or would prepare them to face a difficult situation. In addition, 90% of the characters drinking alcohol were portrayed as "good" characters (Breed, DeFoe, & Wallack, 1984).

Ethnic origin may contribute to the propensity to abuse alcohol. American Indians and Native Alaskans have extremely high rates of alcoholism, despite many tribes being almost totally abstinent. Hispanic Americans have a higher tendency to develop alcoholism than the remainder of the general population. Caucasian males are more likely to be heavy drinkers than African American males. Asian Americans, especially Asian American women, are less likely than other ethnic groups to develop alcohol problems (National Institute on Alcohol Abuse and Alcoholism, 1987).

Familial tendencies toward alcoholism also may play an important part in the development of alcohol-related problems. Alcoholics are more likely than nonalcoholics to have a mother, father, or other relative who is an alcoholic (Glenn & Parsons, 1989).

One theory concerning the development of alcohol abuse is the Tension Reduction Hypothesis (TRH). Although the title "TRH" was not coined until the early 1950s, the idea that stress can be relieved by alcohol consumption, and that people drink alcohol to gain the stress-relieving effects became popular in this country shortly after the Civil War, when the United States began in earnest to industrialize. This rather sudden switch from a primarily agricultural society to a cramped, crowded urban-industrial society was believed to be extremely stressful to those uprooted by the change. It was presumed that some of these persons then drank alcohol to gain some measure of stress relief. Although no empirical data was available or sought during this time, observation led to the acceptance of this concept of stress-alcohol interaction by both physicians and lay persons by the turn of the century (Connors & Maisto, 1983; Druley, Baker, & Pashko, 1987; Lender, 1987; Powers & Kutash, 1985).

The TRH consists of two parts. The first is that alcohol reduces tension, possibly because of its depressing or tranquilizing effects. The second part is that people consume alcohol to obtain these tension reducing benefits. An individual who has received tension relief by consuming alcohol reinforces the use of alcohol for tension reduction. Drinking then becomes a major part of the individual's tension coping pattern (Kalodner, Delucia, & Ursprung, 1989; Powers & Kutash, 1985; Young, Oei, & Knight, 1990).

In 1951, the TRH was first formally named by Conger (Young, Oei, & Knight, 1990). In an experiment with rats, Conger tested the success of alcohol in reducing fear or anxiety. Conger referred to his results as the Fear Reduction Hypothesis but stated that fear had been described by others as anxiety when the source of the fear was ambiguous. Other terms he cited as being used by others in place of the word fear were stress, worry, and tension (Conger, 1955).

In his experiment, Conger (1951) used 10 rats trained to travel the length of a chamber to receive food. After initial training, the rats were subjected to adverse stimuli when they approached the food end of the chamber. When all rats showed signs of anxiety as they approached the end of the chamber, the adverse stimuli were removed. Five of the rats were then given injections of alcohol and travelled to the end of the corridor without any sign of anxiety and obtained their food. The other five rats, who had received injections of water, approached the food end of the chamber warily (Conger, 1951).

The idea of drinking alcohol to decrease tension is not new and is not limited to discussions of alcohol abuse in the United States. After making observations of alcohol use across primitive societies throughout

the world, Horton (1943) came to the following conclusion about alcohol consumption and stress, which he referred to as "anxiety."

Anxiety is so universal and constant an experience of mankind that any means of alleviating this burden of pain must be valued. Compared with the rather limited and by no means unique food value of alcohol, or the fatigue-relieving function of alcohol, its power to reduce anxiety stands out as unequivocally significant. These considerations lead to the assumption that the primary function of alcoholic beverages in all societies is the reduction of anxiety. The term primary is given the following significance: Primary means that the consumption of alcohol in any society is more adequately explained by its anxiety-reducing function than by any other function. (p. 223; underlined entries appeared in italics in the original text)

Review of the literature concerning the TRH reveals disparate conclusions (Cappell & Herman, 1972). Laboratory experiments with humans have sometimes shown increases or no change in anxiety following alcohol consumption (Powers & Kutash, 1985; Young, Oei, & Knight, 1990). Experiments on the TRH use widely varying adjectives to describe "tension." These have included stress, tension, anxiety, arousal, depression, lowered self-esteem, anger, and other dysphoric states (Powers & Kutash, 1985). This definitional ambiguity may be an explanation for the contradictory conclusions.

In experiments which defined tension as avoidance behavior the TRH was generally not supported. One example of this type of study was performed by Broadhurst and Wallgren (1964) who tested the hypothesis that alcohol administration would cause avoidance acquisition to be delayed. Seventy-six albino rats were placed individually in a box-like apparatus, and after 16 minutes each rat was administered an electric shock. When the rat attempted to escape by moving to the far side of the apparatus the shock was terminated. The time it took the rat to attempt to escape was recorded. The rat was then given an administration of alcohol, and the experiment was repeated. No significant difference in

avoidance behavior was noted between pre-alcohol and post-alcohol trials until the alcohol doses were large enough to impair the animal's motor abilities. The experimenters, therefore, concluded that the TRH was not supported (Broadhurst & Wallgren, 1964). Similar experiments reached the same conclusion (Cappell & Herman, 1972).

Hodgson, Stockwell, and Rankin (1979) agreed that experiments on avoidance behavior did not support the TRH, but felt that these were testing escape from real physical injury rather than avoiding a mentally distressing situation. "Avoidance stimulated by pain is not the same as avoidance stimulated by conditioning" (p. 462).

Conflict resolution experiments consistently support the TRH. These studies, like Conger's (1951), face an animal with a dilemma of having to cross an area previously associated with adverse stimuli. Alcohol administration consistently was associated with faster crossing times by these animals with less apparent fear responses. Cappell and Herman (1972) postulate that these increases in crossing times could be due more to impaired judgement or loss of recent memory of aversive stimuli than to stress reduction.

Risk-taking behavior experiments also generally support the TRH. A study of risk-taking behaviors by Teger, Katkin, and Pruitt (1969) examined 36 graduate students' willingness to offer risky advice to a friend. Half of the subjects were asked to complete a 12-item choice dilemma questionnaire sober and then after four doses of one of three randomly chosen types of 80-proof alcohol. The other 18 subjects completed the same questionnaire after four doses of the alcohol and then again when their blood levels had returned to normal. The results indicated that the respondents were more willing to choose risky

responses after four doses of alcohol than when they were sober. Cappell and Herman (1972) state that while these results seem to support the TRH, "motivation for behavior cannot be established on the basis of one of its consequences" (p. 60).

Experiments which examined physiologic changes induced by stress and by administration of alcohol support the TRH. Three experiments examined the effects of stress and alcohol administration on plasma amino acid levels in rats. Four amino acids were shown to increase significantly in seven male rats subjected to stress induced by immobilization and catheterization (Milakofsky, Hare, Miller, & Vogel, 1985). The plasma levels of these same four amino acids were shown to decrease significantly in 11 male rats which received injections of alcohol without other stressors (Milakofsky, Miller, & Vogel, 1986). After stress was induced by immobilization and catheterization in another seven male rats, two of the four amino acid levels were found to have decreased from pre-stress levels, while the remaining two levels were found to have significantly less elevation than with stress alone (Milakofsky, Miller, & Vogel, 1987). Alcohol apparently has a pharmacologic action which acts in opposition to the effects of stress on amino acids.

Stressful situations also apparently increase the amount of alcohol ingestion. Hsieh, Khan, Cheng, and Curran (1988) reviewed the medical records of all new referrals to a midwestern mental health clinic. The period examined covered January 1, 1981 through December 31, 1985. This was a period of increasing hardship for family farmers, and the researchers hypothesized that they would find an increase in stress-related disorders. The results indicated that there was a steady

increase in the percentage of farmers who were newly referred for treatment at the mental health clinic. In addition, the percentage of farmer referrals who were having difficulty with alcohol increased from approximately 30% of all referrals in 1981 to 72% of referrals in 1984. This trend dropped to 61% in 1985. As the farm crisis escalated in the first half of the decade, mental health referrals among farmers increased, as did the percentage of those who were referred with alcohol related problems.

Druley, Baker, & Pashko (1987) report that alcohol and drug use levels, which were elevated among U.S. soldiers serving in Viet Nam, returned to near pre-combat levels after these soldiers returned to the United States. Narcotic and alcohol use dropped from 43% in combat areas to 10% upon return to the United States. Pre-combat use estimates were 8%.

Alcoholism has been found in greater numbers among persons suffering from anxiety disorders. Weissman (1988) reports that the risk of alcoholism in persons with phobias of any kind is approximately 2.5 times higher than in the population at large. There is four times the incidence of alcoholism among patients with panic disorders. Although time-sequence was not explored, this report does indicate that anxiety and increased alcohol consumption are related.

Stress has been shown to be a major factor in precipitating renewed drinking among problem drinkers trying to refrain from consuming alcohol. Marlatt and Gordon (1979) interviewed 70 individuals who had completed alcoholism treatment programs in the state of Washington. Forty-eight of the subjects were treated in a state hospital, and the remaining 22 were treated in Veterans' Administration hospitals. The subjects were identified as having relapsed during a state-wide study to determine the

effectiveness of the state's treatment programs. Relapse was defined as willfully drinking any amount of alcohol, and the subjects were interviewed regarding their experiences immediately prior to their initial relapse episode. The results revealed that 38% of the subjects indicated that they drank in response to "negative emotional states" such as frustration and/or anger, fear, anxiety, tension, depression, boredom, worry, apprehension, grief, loss, or similar dysphoric states. Eighteen percent reported "interpersonal conflict" as the proximal cause of their relapse. This response included feelings cited under "negative emotional states" but which also involved other individuals. Another 18% reported social pressure, either "direct" (being actively encouraged by others to have a drink) or "indirect" (observing others engaged in drinking), as the precipitator of relapse. The remaining 26% reported resuming their drinking to relieve physical pain, test their ability to control their drinking, relieve physical cravings for alcohol, or to celebrate an event (Marlatt & Gordon, 1979).

Kalodner, Delucia, and Ursprung (1989) compared the self-reported amounts of alcohol consumed to self-reports of stress among 81 college students. The subjects were 36 male and 45 female college students, mostly sophomores, enrolled in the Spring semester of 1985. The Khavari Alcohol Test and the State-Trait Anxiety Inventory were the two instruments utilized. Results of this study supported the hypothesis that students with high levels of trait anxiety would consume more alcohol than students with low levels of trait anxiety. Among male students, respondents indicating high levels of anxiety reported alcohol consumption 45% higher than respondents indicating low levels of anxiety. Among females, respondents who reported high levels of anxiety indicated

a 28% higher rate of alcohol consumption than respondents who reported low levels of anxiety.

A non-random sample of 2,496 respondents to a questionnaire examining reasons people drink showed stress to be a major reason. "Drinking helps me to forget my worries" was the most common response. "I drink to relieve tension and stress" and "Drinking helps me forget some of my problems" were the two second most common reasons cited. "I need a drink to help me relax" was a close third. The respondents included 1,711 undergraduate students, 313 Air Force reservists, 193 Army reservists, 64 members of a local labor union, and 215 individuals from the general population (Farber, Khavari, & Douglass, 1980).

There are several postulations about how alcohol reduces tension. The first is that alcohol has a direct pharmacological effect on physiological responses to stress. A second possibility is that individuals are distracted by the effects of the alcohol and therefore pay less attention to the stressor. A third possibility is alteration of the perceived threat. Individuals who have ingested alcohol perceive the stressor to be less threatening than they would if they were sober. A fourth possible explanation is expectancy. Individuals believe that alcohol will allow better performance under stressful situations.

Alcohol Expectancy

Prior experiences with alcohol may mediate when and why a person drinks or refrains from drinking (Abrams, 1983). One factor which may have significant impact on drinking to reduce stress is alcohol expectancy. Alcohol expectancy is defined as the individual's expected response to the ingestion of alcohol (Brown, Christiansen, & Goldman, 1987). "Whereas a strict tension reduction conceptualization predicts

that all stressful events should uniformly increase alcohol consumption in direct proportion to the level of stress induced, the available data do not support this unitary assumption. A person's drinking decisions may be influenced by the quality of a stressful situation in relation to their expectations of alcohol's relevant effects" (Tucker, Vuchinich, Sobell, & Maisto, 1980, p. 172).

Powers and Kutash (1985) reviewed expectancy literature and found that between 85 and 95% of those surveyed by various researchers indicated that alcohol is an expected tension reducer. Abrams and Wilson (1979) found a lower expectancy for tension reducing effects from alcohol. In a study of 72 college students, 62.5% of students reported that they expected alcohol to decrease tension. The remaining 37.5% either felt that alcohol would have no effect on stress levels or would result in increased anxiety.

"Alcohol expectancies are important to our understanding of alcohol use because of their relationship to both abusive and nonabusive drinking patterns, prediction of behavior while drinking, as well as future drinking and potential mediation of alcohol consumption decisions" (Brown, Christiansen, & Goldman, 1987, p. 484). However, studies generally explore only expectancy and alcohol use or anxiety and alcohol use. The three are not examined together (Kalodner, Delucia, & Ursprung, 1989).

Several experiments have sought to examine the relationship between expectancy and observed behaviors or conditions. To examine expectancies, in each of the following experiments subjects were divided into four groups: (a) expect alcohol/receive alcohol; (b) expect alcohol/receive tonic; (c) expect tonic/receive alcohol; and, (d) expect tonic/receive tonic.

In the first experiment, Lang, Goeckner, Adesso, and Marlatt (1975) examined the effects of alcohol on aggression in 96 male undergraduate subjects at the University of Wisconsin-Milwaukee. All the subjects were classified as heavy drinkers. Subjects were administered drinks as outlined above and placed in a room with a male confederate. The subject was assigned the role of "teacher," while the confederate (thought by the subject to be another subject, but actually a research assistant) was assigned the role of "student" and had to trace a figure visible only in a mirror. Any errors in the tracing would result in the receipt of an electrical shock from the teacher. Regardless of the type of drink consumed, those who believed they had received alcohol gave significantly longer and more intense shocks than did those who thought they were receiving tonic.

A second study by Wilson and Lawson (1976) examined sexual arousal in 40 male undergraduate students aged 18 to 22 years. Following the administration of beverages, they were shown two explicitly sexual films, one heterosexual and one homosexual involving males. Again, the results indicated that those who believed they had consumed alcohol, regardless of the beverage content, had the most notable responses. The responses were evidenced by penile tumescence changes measured by a mercury strain gauge.

In a third study by Abrams and Wilson (1979), 32 female undergraduates aged 18 to 25 years were studied for the effects of alcohol on arousal. Alcohol or non-alcoholic beverages were again administered as described above. Arousal was measured during a social interaction with a male confederate, using biofeedback and vital sign measurements. Results revealed that those subjects who believed that

they had received alcohol showed significantly more arousal than those who believe that they had received tonic alone, regardless of the actual drink content. The results of these studies indicated that behavioral changes were mediated more by the expectation of the effects of alcohol than of any physiologic action of alcohol.

Forty male undergraduates at Loyola University were the subjects in a fourth study by Polivy, Schueneman, and Carlson (1976). In this study, tension was induced by telling the subjects that they were going to be given electric shocks. The subjects were divided into the four expectancy groups: (a) expect alcohol/receive alcohol; (b) expect alcohol/receive tonic; (c) expect tonic/receive alcohol; and (d) expect tonic/receive tonic. The subjects who actually received alcohol showed greater tension reduction as recorded from vital sign and biofeedback monitors. However, a significant increase in tension was noted in those who were told they would receive alcohol as they anticipated receipt of their beverage. The authors concluded that while the pharmacological effects of alcohol apparently decreased the subjects' tension levels, the anticipation of alcohol was apparently somewhat stress inducing. The authors postulated that this may have been due to the fact that, as college students, many of the subjects had little experience with alcohol.

Brown, Christiansen, and Goldman (1987) have found that adults, adolescents, and abusing populations consistently demonstrate a relationship between their alcohol use choices and their expectations about its effects. For example, adolescents and college students who use alcohol only in social situations indicate that they expect social facilitation as a result of their alcohol use. Christiansen and Goldman (1983) feel that alcohol expectancies are developed in adolescents before

actual drinking begins. This may play a role in how these individuals use alcohol later in life.

If alcohol expectancy has a major impact on alcohol consumption, then this has implications for those involved in alcohol treatment programs. Successful outcome of treatment may be dependent on altering the individual's beliefs concerning the effects of alcohol. Treatments aimed specifically at tension reduction could be significantly enhanced by adding expectancy education. For example, if certain individuals expect alcohol to make them feel more comfortable in social situations, then treatment for these individuals would focus on social skills training. At the very least, understanding the role expectancy plays could be used to identify treated individuals most likely to have trouble abstaining (Young, Oei, & Knight, 1990).

CHAPTER III METHODOLOGY

The purpose of this study was to explore the relationship between self-reports of trait anxiety levels, expectations that alcohol will relieve anxiety, and level of alcohol consumption. In this study a survey design was used. Three questionnaires were used; one to measure level of trait anxiety, one for alcohol expectancy, and another to determine alcohol consumption patterns. The dependent variable in this study was alcohol consumption; trait anxiety level and alcohol expectancy were the independent variables.

Setting

The study was conducted with subjects employed in a federal government office in Washington, DC. Eighty-five individuals returned completed questionnaires, and all respondents were employees of the federal government.

Sample

A total of 224 surveys were distributed to English speaking employees of a federal government office building in Washington, DC. A convenience sample of 85 respondents who returned completed questionnaires was obtained.

Procedure

The study was exempt from review by the Institutional Review Board (IRB) of the J. Hillis Miller Health Science Center. After IRB approval, permission from the federal government office in question was obtained. Permission was obtained from both of these sources before beginning any data collection.

Following approval, the researcher sent 224 copies of the questionnaires to an office employee known to both the researcher and to the other employees in the office. This employee hand-delivered the questionnaires to 224 employees who had volunteered to receive the surveys.

Each respondent received a description of the study and letter of invitation to participate (Appendix A), a demographic survey (Appendix B), and three questionnaires (Appendix C). The description explained the nature and procedure of the study, and explained that return of completed questionnaires constituted consent to participate in the study. The demographic survey assessed participants' age, sex, race, marital status, and history of family alcohol or drug abuse.

All subjects were asked to complete three self-administered questionnaires. Completion of all questionnaires was expected to take approximately 40 minutes. The first, the Trait Scale of the State-Trait Anxiety Inventory (STAI Form Y-2), assessed self-report levels of trait anxiety. The second questionnaire, the Alcohol Expectancy Questionnaire (AEQ), assessed attitudes and beliefs concerning the expected effects of alcohol consumption. The third questionnaire, the Khavari Alcohol Test (KAT), assessed the usual and maximum consumption of beer, wine, and distilled spirits in both quantity and frequency (see Appendix C for ordering information for STAI, AEQ, and KAT). Participants were instructed not to put their names on any form to ensure anonymity.

Instruments

The State-Trait Anxiety Inventory

The instrument selected to assess trait anxiety was the State Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs,

1983), Form Y-2. Form Y-2 of the STAI assesses trait anxiety only, and is a 20-item Likert scale questionnaire designed to assess individuals' perceptions of their overall pattern of anxiety. This questionnaire takes approximately five minutes to complete. The questionnaire utilizes a four-point scale, which ranges from "almost never" to "almost always." Scores are totalled after reverse-scoring of items, as appropriate, and can range from 20-80. Higher scores indicate the presence of a higher level of anxiety than lower scores.

Spielberger, Gorsuch, Lushene, Vagg, and Jacobs (1983) report that the trait scale test-retest correlation using a 20-day interval was .86 for male respondents and .76 for females. Using a 104-day interval, the correlations were .73 for males and .77 for females. Spielberger, Gorsuch, Lushene, Vagg, and Jacobs (1983) assessed the validity of the scale by comparing it to the Multiple Affect Adjective Checklist (Zuckerman, Lubin, Vogel, & Valerius, 1964) and the Institute for Personality and Ability Testing Anxiety Scale (Cattell, Krug, & Scheier, 1976), and found correlations of .52 and .75 respectively. The STAI Form Y is an updated version of the STAI Form X, which is one of the most commonly used measures of self-reports of anxiety (Kalodner, Delucia, & Ursprung, 1989). Form X and Y correlations were found to be .98 for college males and .96 for college females (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The Alcohol Expectancy Questionnaire

The instrument selected to assess alcohol expectancy was the Alcohol Expectancy Questionnaire (AEQ; Brown, Goldman, Inn, & Anderson, 1987), which was designed to measure respondent's expectations about the effects of alcohol use. The AEQ is a 120-item questionnaire which assesses individuals' expectations of the effects of moderate alcohol use ("a

couple of drinks" or "a few drinks") on six scales: global positive changes; sexual enhancement; physical and social pleasure; increased social assertiveness; relaxation and tension reduction; and arousal and aggression. This survey takes approximately 25 minutes to complete.

Individuals are asked to answer whether or not they agree with each statement about alcohol's effects. For each item with which the respondent agrees, the respondent receives 2 points. For each item with which the respondent disagrees, the respondent receives 1 point. For each scale, scores will range from one multiplied by the number of questions to two multiplied by the number of questions. The total score for the AEQ is obtained by adding the scores from each scale.

To test the internal consistency of the AEQ, coefficient alphas were obtained from a sample of 176 nonproblem drinking adults. The coefficient alphas for the six scales ranged from .72 to .92 with a mean coefficient of .84 (Brown, Christiansen, & Goldman, 1987). Test-retest reliability using an 8-week interval resulted in a reliability coefficient of .64 (Brown, Christiansen, & Goldman, 1987).

The Khavari Alcohol Test

Finally, the Khavari Alcohol Test (Khavari & Farber, 1978) was used to assess current levels of alcohol use by individual respondents. This 12-item questionnaire assesses usual and maximum alcohol intake. Four questions each relate to the consumption of beer, wine, and distilled spirits. This survey takes approximately 10 minutes to complete.

Respondents are asked to answer questions in multiple choice format concerning their usual and maximum amounts of various types of alcohol consumed. The resultant ordinal values are converted using loading factors to determine annual volume of alcohol consumed expressed in ounces per year.

Test-retest reliability using a two-week interval found reliability coefficients which ranged from .78 for wine maximum frequency to .98 for wine maximum volume. The mean correlation was .92. The validity of the scale was tested by comparing a sample of previously identified alcoholics with three other groups of respondents. While the alcoholics' responses were consistently two standard deviations above the mean responses, only one of the comparison groups' scores were as much as 0.5 standard deviations above the mean responses (Khavari & Farber, 1978).

Data Analysis

Data were analyzed for each of the following:

Hypothesis 1. There is a positive correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption.

Hypothesis 2. There is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption.

Hypothesis 3. There is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption when there is a negative correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption.

A 0.5 level of significance is used throughout. Pearson product moment correlations are used to test Hypotheses 1 and 2, and multiple regression techniques are used to test Hypothesis 3.

CHAPTER IV DATA ANALYSIS

The purpose of this study is to explore the relationship between self-reports of trait anxiety levels, expectations that alcohol will reduce anxiety, and level of alcohol consumption. Data are analyzed to test three hypotheses. The first hypothesis is that there is a positive correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption. The second hypothesis is that there is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption. The Pearson Correlation Coefficient is used to treat the data in the first two hypotheses. The third hypothesis is that there is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption when there is a negative correlation between self-reports of anxiety levels and self-reports of level of alcohol consumption. Multiple regression analysis is performed to explore this interaction.

Sample Characteristics

The sample consists of 85 English speaking federal employees working in a United States' government office building in Washington, DC. Two hundred twenty-four persons were given questionnaire packets. Only 85 persons returned completed questionnaires.

Sixty-five (77.3%) subjects are between the ages of 30 and 49 years. Forty-three (51.1%) subjects are between the ages of 40 and 49 years.

Thirty-six (26.2%) are between the ages of 30 and 39 years. No subjects are less than 21 years. One subject did not respond to the question about age. The majority of the subjects are Caucasian ($n = 70$, 83.3%), married ($n = 60$, 71.4%), and male ($n = 54$, 64.3%). One subject did not respond to the three questions about race, marital status, and gender. More than one third of the subjects ($n = 31$, 37.7%) indicate that they have a family member who suffers from alcohol or drug abuse problems. Two subjects did not respond to the question about family history of alcohol or drug abuse. Almost all of the subjects ($n = 79$, 92.9%) report that they consume alcohol. Demographic data collected for this sample is presented in Table 4-1.

Hypothesis Testing

The first hypothesis, that there is a positive correlation between self-reports of trait anxiety levels and self-reports of level of alcohol consumption, is not supported by the study results. The correlation between the subjects' responses on the State Trait Anxiety Inventory (STAI), Form Y-2 (trait anxiety), and subjects' responses on the Khavari Alcohol Test (KAT) are negatively correlated, but statistically insignificant ($r = -0.12$, $p = .2937$). There is little, if any, correlation between these two variables.

Possible scores on the STAI range from 20 to 80, with lower scores indicating lower levels of anxiety. In previous research using the STAI, the mean trait anxiety scores for working adults were 34.79 ($SD = 9.22$) for females and 34.89 ($SD = 9.19$) for males (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). In the current study, trait anxiety scores range from 22 to 65, with a mean of 35.9 ($SD = 8.31$). This score represents a sample with slightly higher trait anxiety responses than the norm reported by the test authors.

Table 4-1

Demographic Characteristics of Sample (n = 85)

Characteristic	n	%
Sex:		
Male	54	64.3
Female	30	35.7
Race:		
Caucasian	70	83.3
African American	6	7.1
Hispanic	3	3.6
Oriental	4	4.8
American Indian	0	0.0
Other	1	1.2
Age:		
Less than 21 years	0	0.0
21 - 29 years	14	16.7
30 - 39 years	22	26.2
40 - 49 years	43	51.1
50 - 59 years	5	6.0
Marital Status:		
Single	14	16.7
Married	60	71.4
Divorced	10	11.9
Widow/Widower	0	0.0
Family History of Alcohol or Drug Abuse:		
Yes	31	37.3
No	52	62.7
Personal Consumption of Alcoholic Beverages:		
Yes	79	92.9
No (religious reason)	0	0.0
No (medical reason)	0	0.0
No (personal reason)	2	2.4
No (other reason)	4	4.7

The second hypothesis is that there is a positive relationship between the expectation that alcohol will reduce anxiety and self-reports of level of alcohol consumption. The results show that the correlation between the subjects' responses on the Alcohol Expectancy Questionnaire and the subjects' responses on the Khavari Alcohol Test are positively related, but statistically insignificant ($r = 0.13$, $p = .2243$). There is a slight correlation between these two variables.

Possible scores on the AEQ range from 120 to 240, with higher scores indicating more positive expectations about the stress reducing effects of alcohol. In this study, the subjects' responses range from 122 to 236, with a mean of 159 ($SD = 25$).

The third hypothesis is that there is a positive correlation between expectations that alcohol will reduce anxiety and self-reports of level of alcohol consumption when there is a negative correlation between self-reports of trait anxiety and self-reports of level of alcohol consumption. By regressing scores of alcohol consumption level on scores of trait anxiety levels and AEQ scores, it is found that AEQ scores account for some of the alcohol consumption values in instances when the self-reports of trait anxiety are negatively correlated to self-reports of level of alcohol consumption. Only 3% of the variation in alcohol consumption is explained by the combined effects of trait anxiety and AEQ scores ($F = 1.35$, $p = .2644$). These results are not statistically significant and therefore do not support the hypothesis.

Self-reports of alcohol consumption among this sample are also generally low. The KAT records the number of glasses or cans of beer, glasses of wine, and mixed drinks the individual consumes in a year, and then uses conversion factors to establish the amount of alcohol consumed annually. Heavy drinking may be operationally defined as consuming eight or more drinks per day or just under four ounces of pure alcohol

(Goodwin, 1988). Additionally, the annual per capita pure alcohol consumption rate for persons in the United States 14 years old or older is 2.65 gallons. This translates to almost one ounce (0.93 oz.) of pure alcohol per day (Goodwin, 1997).

In this study, KAT scores range from zero to 695 ounces of alcohol per year. The mean for this sample is 134 ounces, with a standard deviation of 160 ounces. Beer is consumed in the largest quantities, ranging from zero to 15,200 ounces of beer annually (684 ounces of alcohol), with a mean of 1,270 ounces of beer annually (57.17 ounces of alcohol). Wine consumption ranges from zero to 3,256 ounces per year (488 ounces of alcohol), with a mean of 272 ounces per year (40.8 ounces of alcohol). Whiskey or liquor consumption is reported to range from zero to 936 ounces per year (421.2 ounces of alcohol), with a mean of 81 ounces per year (36.45 ounces of alcohol). Standard deviations, as well as a comparison table, can be found in Table 4-2.

Summary

The results of this study do not reveal any statistically significant relationships between trait anxiety levels, alcohol expectancy, and alcohol consumption. A statistically insignificant negative correlation is found between trait anxiety levels and alcohol consumption levels. A statistically insignificant positive correlation was found between alcohol expectancy and alcohol consumption. Also, there is no relationship between alcohol consumption and AEQ scores when trait anxiety level was accounted for. That is, there is insufficient evidence to indicate that a low level of alcohol consumption at a high level of trait anxiety would produce a low AEQ finding.

Table 4-2

Self-Reported Annual and Daily Beer, Wine, Liquor and
Absolute (Pure) Alcohol Consumption Rates Among
Adults (n = 85)

	Annual Consumption Rate (in ounces)				
	Mean	Min.	Max.	SD	National Average
Beer	1270	0	15,200	2361	Not available
Wine	272	0	3,256	490	Not available
Liquor (Whiskey, Rum, etc.)	81	0	936	169	Not available
Absolute (Pure) Alcohol	134	0	695	160	339.2
	Daily Consumption Rate (in ounces)				
	Mean	Min.	Max.	SD	National Average
Beer	3.45	0	41.64	6.47	Not available
Wine	0.75	0	8.92	1.34	Not available
Liquor (Whiskey, Rum, etc.)	0.22	0	2.56	0.46	Not available
Absolute (Pure) Alcohol	0.36	0	1.90	0.44	0.93

CHAPTER V
DISCUSSION OF RESULTS, IMPLICATIONS FOR NURSING PRACTICE, AND
RECOMMENDATIONS FOR FURTHER RESEARCH

Discussion of Results

Since the turn of the century, physicians and lay persons have accepted the notion that stress can be relieved by alcohol consumption (Connors & Maisto, 1983; Druley, Baker, & Pashko, 1987; Lender, 1987; Powers & Kutash, 1985). Prior to the 1950s, this acceptance was based on anecdotal or observational evidence (Horton, 1943; Young, Oei, & Knight, 1990). Since Conger's (1955, 1951) laboratory experiments which sought to provide empirical evidence supporting the Tension Reduction Hypothesis (TRH), studies on the use of alcohol to reduce stress have revealed conflicting results (Cappell & Herman, 1972; Powers & Kutash, 1985; Young, Oei, & Knight, 1990). Kalodner, Delucia, and Ursprung's (1989) study of college students found that male students reporting higher trait anxiety levels on the State-Trait Anxiety Inventory reported consuming 45% more alcohol than students reporting lower trait anxiety levels. Female students reporting higher trait anxiety levels reported drinking 28% more alcohol than those who reported lower trait anxiety.

The current study fails to support the TRH. The results of a correlation between self-reported trait anxiety and alcohol consumption indicate that there is a negative relationship between these two variables in these subjects, although the results are not statistically significant. In general, persons who indicate that they have lower trait

anxiety report that they drink more alcohol than their counterparts who report higher levels of trait anxiety.

There are several possible reasons why this study fails to support the TRH. Subjects in this study are older than most groups which have been used to study the TRH. Kalodner, Delucia, and Ursprung (1989) used the same questionnaires (STAI, Y-2, and KAT), but studied a sample of college students, mostly sophomores. One respondent in the current study wrote, "I think age is a great determinant of what alcohol does or does not do for most people. When I was in my twenties alcohol did all kinds of magic for me. Now at 43 it mostly gives me a headache."

Another potential internal variable which may have resulted in non-support of the TRH is the selection of the sample. Because a convenience sample is used rather than a random sample, it is possible that this sample over-represents or under-represents certain segments of the population of this office. The sample obtained is rather homogeneous. More than two thirds of the population are married Caucasians between the ages of 30 and 49 years. Of the 224 individuals who volunteered to receive the surveys, only 85 (38.4%) completed and returned the surveys. The large number of questions (a total of 158 on the demographic survey, the STAI Form Y-2, the KAT, and the AEQ) and the length of time required to complete the questionnaires (approximately 40 minutes) may have also contributed to the low rate of return. Additionally, the fact that all employees in this office must undergo a rigorous security clearance may result in individuals with histories of high levels of alcohol consumption being refused employment. It is also possible that individuals who drink more heavily may feel that this information is too sensitive to share, even with assurances of anonymity.

Lack of availability of the researcher to answer respondent's questions about the surveys may have resulted in some incorrect or inaccurate responses. For example, several respondents indicated on their demographic surveys that they do not consume alcohol, and yet indicate on the KAT that they consume beer and wine. Other problems may have been encountered causing the individuals to respond errantly.

Alcohol expectancy, or individuals' perceptions of how alcohol consumption will affect them, has also been hypothesized to be a mediating factor in whether or not one consumes alcohol (Abrams, 1983). In the current study, positive views about alcohol consumption, as measured by responses on the Alcohol Expectancy Questionnaire (AEQ), are positively related to amount of alcohol consumed. However, this correlation is not statistically significant.

Age, again, may play a mediating effect in the relationship between alcohol expectancy and alcohol consumption. Prior experience with alcohol may alter individuals' perceptions of what alcohol will do for them or to them (Abrams, 1983). A larger sample may also reveal a more statistically significant relationship between alcohol consumption and alcohol expectancy. A younger, larger population may yield more significant results.

One third of the sample report having a family member experiencing alcohol or drug abuse problems. This may have contributed to the low levels of alcohol consumption in this sample. In addition, having seen the effects of alcohol or drug abuse on a family member, respondents may have less expectations that alcohol will reduce anxiety.

"A person's drinking decisions may be influenced by the quality of a stressful situation in relation to their expectations of alcohol's relevant effects" (Tucker, Vuchinich, Sobell, & Maisto, 1980, p. 172). The third hypothesis in this study examines the relationship between anxiety level and amount of alcohol consumed, and the interaction effect of alcohol expectancy. According to Kalodner, Delucia, and Ursprung (1989), anxiety, alcohol use, and alcohol expectancy have not been examined in one study. The results of this study do not indicate a statistically significant correlation between expectations that alcohol will reduce anxiety and level of alcohol consumption when trait anxiety levels are negatively correlated to level of alcohol consumption.

The population in this study does not indicate heavy drinking patterns. Heavy drinking may be operationally defined as consuming eight drinks or more per day, or just under four ounces of pure alcohol (Goodwin, 1988). Based on per capita annual consumption rates for persons 14 years of age and older, consumption rates in the United States average approximately one ounce of pure alcohol per day. On average, the subjects in this study report consuming one ounce of alcohol every 2.6 days, or the equivalent of about 1.5 glasses of wine every two to three days. It is possible that federal employees in their 30s and 40s have modified their drinking habits to continue gainful government employment.

Implications for Nursing Practice

While the results of this study are not statistically significant, nurses working with patients suffering from alcohol-related difficulties should be aware of some of the implications of the findings. It has been suggested that understanding the effect of expectation on alcohol

consumption may improve treatment efforts (Young, Oei, & Knight, 1990). The results of this study do not indicate that alcohol expectancy had a significant effect on the amount of alcohol consumed. Because of the sample selection technique, these results cannot be generalized. Nurses should continue to individualize treatment plans based on the needs of the individual client and on the principles established by their respective institutions.

Recommendations for Future Research

While the age, size, and sample selection may have contributed to the statistically nonsignificant results, it may also be an indication of the necessity to study older people in examining the TRH. Older people may not place the same emphasis on drinking that younger people do, and may not have expectations that alcohol can reduce anxiety.

On the other hand, if drinking patterns are learned behaviors a longitudinal study may be important. By the time an individual is 40, it is conceivable that the individual's drinking patterns are established and impervious to extrinsic factors or alcohol expectancy motivators. If a 21 year old begins drinking because of an expectation that alcohol will reduce anxiety and continues to drink whenever anxiety is felt or anticipated, a habit of drinking to obtain anxiety reduction may persist into later years with or without the presence of increased anxiety.

Replications of this study including the three variables of anxiety, alcohol expectancy, and alcohol consumption using comparison groups might also be beneficial. For example, data from these three surveys could be used to compare responses of college students to a group of older business persons to examine the effect of age, social status, and sex on alcohol expectancy, anxiety, and alcohol consumption.

Gathering a sample more representative of the population in general might also determine whether other extrinsic variables were present in this study. Federal employees may have reasons to reduce their drinking, or may have easier access to alcohol education/treatment program should their drinking become excessive. A sample consisting of persons below the drinking age, college students, blue-collar and white-collar workers, and others may reveal patterns across groups or intrinsic to particular groups. Knowledge of alcohol expectancy and the consumption of alcohol to reduce stress may help nurses to better individualize plans for treatment for those suffering from alcohol related difficulties.

APPENDIX A

DESCRIPTION OF STUDY AND CONSENT TO PARTICIPATE IN RESEARCH

Description of Study and Consent to Participate in Research

This letter is to request your participation in a study on the relationship between stress, alcohol expectations, and alcohol use conducted by Robert E. Steed as part of a graduate nursing program.

This study is designed to examine the relationships between anxiety, beliefs about the effects of alcohol, and alcohol consumption. Each participant in the study will be asked to complete a demographic survey and three questionnaires. The questionnaires were designed to assess anxiety levels, alcohol expectations, and alcohol consumption rates. The questionnaires are not designed to assess alcohol-related problems. It will take approximately 45 minutes to complete the demographic survey and the three questionnaires. The information gathered in this study can be used to understand alcohol consumption patterns.

Participation in this study is voluntary and participants may withdraw at any time. All participants will remain anonymous and no mention of specific government agencies or offices will be made in reporting this study. Your return of the completed questionnaires will constitute informed consent.

If you would like a report of the results of this study, please contact Robert E. Steed, Graduate Student, Researcher, or Karolyn Godbey, Ph.D., Graduate Advisor, at the following address:

Box J-187
J.H.M.H.C.
College of Nursing
University of Florida
Gainesville, Florida 32610

Thank you for your participation.

Robert E. Steed

APPENDIX B
DEMOGRAPHIC SURVEY

Demographic Survey

The following information is solicited to help identify characteristics of this study group. You may choose not to answer any or all questions.

Please place a check mark () on the line next to the answer which is appropriate for you.

- | | | |
|---------------------------------|--|-------------------------------------|
| (1) Sex: | (2) Race: | (3) Age: |
| <input type="checkbox"/> Male | <input type="checkbox"/> White | <input type="checkbox"/> 20 or less |
| <input type="checkbox"/> Female | <input type="checkbox"/> Black | <input type="checkbox"/> 21 - 29 |
| | <input type="checkbox"/> Oriental | <input type="checkbox"/> 30 - 39 |
| | <input type="checkbox"/> Hispanic | <input type="checkbox"/> 40 - 49 |
| | <input type="checkbox"/> American Indian | <input type="checkbox"/> 50 - 59 |
| | <input type="checkbox"/> Other | <input type="checkbox"/> 60 or more |

- (4) Marital status:

☐ Single
☐ Married
☐ Divorced
☐ Widowed

- (5) Has anyone in your family ever had an alcohol or drug abuse problem, or does anyone in your family currently suffer from an alcohol or drug abuse problem?

☐ Yes
☐ No

- (6) Do you consume alcohol?

☐ Yes

☐ No, my religious beliefs require that I do not consume alcohol.

☐ No, I cannot consume alcohol as a result of a medical condition.

☐ No, my personal beliefs are that I should not consume alcohol.

☐ No (other reasons for not consuming alcohol. Please elaborate). _____

APPENDIX C

ORDERING INFORMATION FOR THE STATE-TRAIT ANXIETY INVENTORY, THE ALCOHOL
EXPECTANCY QUESTIONNAIRE, AND THE KHAVARI ALCOHOL TEST

ORDERING INFORMATION FOR THE STATE-TRAIT ANXIETY INVENTORY, THE ALCOHOL
EXPECTANCY QUESTIONNAIRE, AND THE KHAVARI ALCOHOL TEST

The State-Trait Anxiety Inventory:

By Charles D. Spielberger, Ph.D. in collaboration with R.L. Gorsuch,
R. Lushene, P.R. Vagg, and G.A. Jacobs (1983).

For copies, please contact:

Consulting Psychologists Press, Inc.
577 College Avenue
Palo Alto, California 94306

The Alcohol Expectancy Questionnaire:

By Mark S. Goldman, Sandra A. Brown, and Bruce A. Christiansen (1987).
[Copyright by S.A. Brown, 1981.]

For copies, please contact:

Dr. Mark S. Goldman
College of Social and Behavioral Sciences
Department of Psychology
University of South Florida
Tampa, Florida 33620-8200

The Khavari Alcohol Test:

By Khalil A. Khavari and Philip D. Farber (1978).

For copies, please contact:

Center for Alcohol Studies
Smithers Hall
Rutgers University
New Brunswick, New Jersey 08903

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